

LEGEND



PUMP



PRESSURE GAUGE



GATE VALVE



CHECK VALVE



SOLENOID

#2

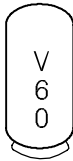
COMPONENT ID. No.
(SEE TABLE ON FOLLOWING PAGE)



FLOW METER



WATER FILTER
(CARTRIDGE TYPE)

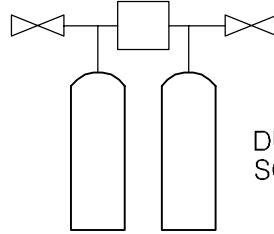


PRESSURE TANK



CL₂

CHLORINE RESERVOIR AND
INJECTION PUMP

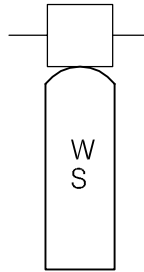


DUPLEX WATER
SOFTENER



SP

WELL WITH
SUBMERSIBLE PUMP



ACTIVATED
CARBON

Z:\0201\Drawings\1260002 Water Assessment YTG\001 - Whitehorse Region\1260002003 Whitehorse Schematic_LEGEND.dwg, 4/11/2006 10:28:07 AM, Adobe PDF, jbuyck



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PROJECT SMALL PUBLIC WATER SYSTEMS ASSESSMENT
WHITEHORSE REGION

CLIENT



TITLE SCHEMATIC SYSTEM
LEGEND

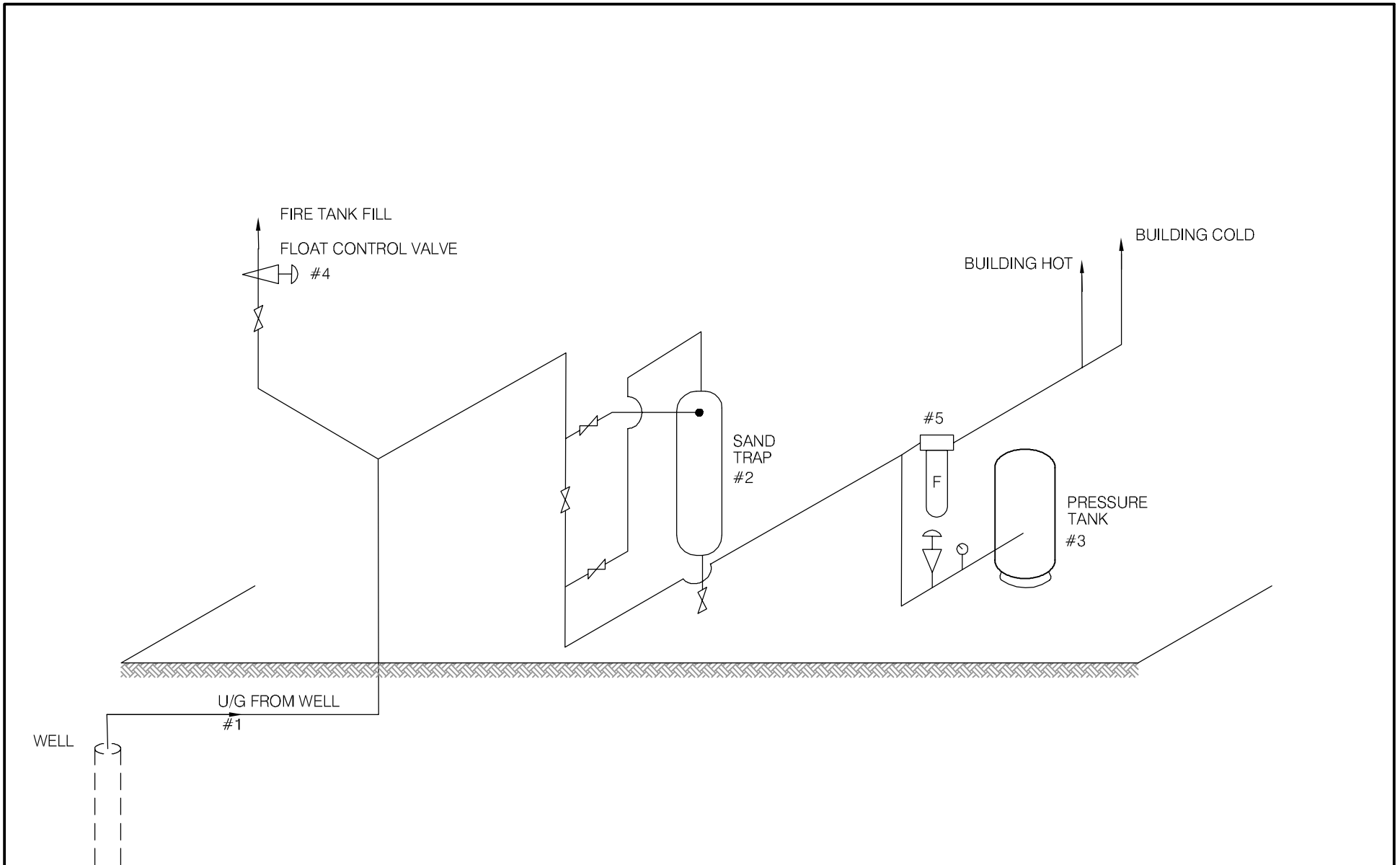
DATE APRIL 2006

DWN. JSB



CHKD. RMM

FILE NO. 1260002

DRWG. LEGEND



SCHEMATIC PRODUCED BY BERT ALBISSER OF AQUA TECH SUPPLIES & SERVICES LTD.

 EBA Engineering Consultants Ltd.		PROJECT SMALL PUBLIC WATER SYSTEMS ASSESSMENT WHITEHORSE REGION	
CLIENT  Highways and Public Works Property Management Branch		TITLE WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: 1391 HOOTALINQUA FIRE HALL	
DATE	APRIL 2006	DWN.	JSB
CHKD.	FMM	FILE NO.	1260002.001
		DWG.:	FIGURE 1391B

**Whitehorse Region – Mendenhall Firehall
Building # 1421**

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	WELL HOUSE STORAGE TANK		2000 VERT			2000 GAL
2	FIRE HALL STORAGE TANKS		1250 AG			1250 GAL
3	FIRE HALL STORAGE TANKS		1250 AG			1250 GAL
4	WELL PUMP 1/2 HP					4" x 1"
5	JET PUMP 1 HP	MYERS	MJ100S-K			1 1/4 x 1"
6	PRESSURE TANK	WELL RITE	WR250R			322 L
7	FILL CONTROL VALVE	ASCO				1" FIPT.
8						
9						
10						

TABLE 1421 - 1: SUMMARY OF BACTERIOLOGICAL RESULTS

Building #	Building Name	Number of Sampling Events	Time Period over which Sampling was Done	Any Positive Total Coliform Results? (yes or no)	Fraction of Positive Total Coliform Results vs. Total Sampling Events	Any positive E.Coli results? (yes or no)	Most Recent Sampling Event Available for EBA Review	Is Most Recent Result Positive?
1421	Mendenhall Firehall	2	Apr-05 to May-05	no	0/2	no	May 05	no



Table 1421-2: Water Quality Results

SOURCE: Building 1421 - Mendenhall Firehall					GCDWQ Criteria		
Location/ Resident		Mendenhall Subdivision					
Address							
Treatment		No					
Source of Water		On-Site Well					
Purpose of Sampling		Baseline	Additional Sampling	Baseline			
Sample Location		Mendenhall Community Association (ASL)					
Date Sampled		13-Mar-00	10-May-05	15-Jun-05	Lower Limit	Upper Limit	
Physical Tests (ALS)					AO	MAC	AO
Colour (CU)		<5	<5.0	<5			15
Conductivity (uS/cm)		563	575	579			
Total Dissolved Solids		347	355	353			500
Hardness CaCO3		240	259	275	AO >200 = poor, > 500 unacceptable ^A		
pH		7.87	8.22	7.87	6.5		8.5
Turbidity (NTU)		<0.1	1.78	9.26		1	5
UV Absorbance			<0.0010				
Dissolved Anions (ALS)							
Alkalinity-Total CaCO3		239	246	251			
Chloride Cl		2.4	4.69	4.85			250
Fluoride F		0.33	0.435	0.409		1.5	
Sulphate SO4		65	71.8	67.9			500
Nitrate Nitrogen N		0.2	0.24	0.22		10	
Nitrite Nitrogen N		<0.1	<0.10	<0.10		1	
Ammonia Nitrogen N			0.042				
Total Metals (ALS)							
Aluminum T-Al		0.008	<0.010	<0.010			
Antimony T-Sb			<0.00050	<0.0005		0.006	
Arsenic T-As		0.0001	0.00018	0.00012		0.025	
Barium T-Ba		0.037	0.043	0.041		1	
Boron T-B		<0.05	<0.10	<0.10		5	
Cadmium T-Cd		<0.0002	<0.00020	<0.0002		0.005	
Calcium T-Ca		68.8	72.6	77.7			
Chromium T-Cr		0.002	<0.0020	<0.0020		0.05	
Copper T-Cu		0.006	0.558	0.709		1	
Iron T-Fe		<0.03	0.757	0.697			0.3
Lead T-Pb		0.002	0.0034	0.0032		0.01	
Magnesium T-Mg		16.6	18.8	19.7			
Manganese T-Mn		<0.001	<0.0020	<0.0020			0.05
Mercury T-Hg		<0.00005	<0.00020	<0.0002		0.001	
Potassium T-K		3.63	3.4	3.31			
Selenium T-Se		0.002	0.0025	0.0019		0.01	
Sodium T-Na		24.7	24.6	23.2			200
Uranium T-U		0.0622	0.0554	0.0578		0.02	
Zinc T-Zn		0.019	0.091	0.091			5
Trihalomethanes							
Bromodichloromethane			-				
Bromoform			-				
Chloroform			-				
Dibromochloromethane			-				
Total Trihalomethanes			-			0.1	
Haloacetic Acids							
Bromoacetic Acid			-				
Bromochloroacetic Acid			-				
Chloroacetic Acid			-				
Dibromoacetic Acid			-				
Dichloroacetic Acid			-				
Trichloroacetic Acid (TCA)			-				
Field Chemistry (EBA)							
pH			7.76		6.5		8.5
TDS			276				500
EC (uS/cm)			535				
Temperature			17.4				
Free Available Chlorine							

Notes:

A. Guidelines indicated for hardness are not CDWQG, rather they are general aesthetic guidelines - exceedences are indicated in yellow highlighting.

Shading indicates exceedence of Proposed MAC guideline (arsenic).

Bold Underline with Yellow shading indicates exceedence of CDWQG MAC

Results are expressed as milligrams per litre except for pH and Colour (CU), Conductivity (umhos/cm), Temperature (°C) and Turbidity (NTU)

< = Less than the detection limit indicated.

AO = Aesthetic Objective

MAC = Maximum Acceptable Concentration (Health Based)



**Table 1421-3: Summary of Well Assessment Results
SMALL PUBLIC DRINKING WATER SYSTEMS**

Well Identification and Location					
Building #	Building Name	Location	Northing (+/- 10 m)	Easting (+/- 10 m)	Grade Elevation (+/- 10 m)
1421	Mendenhall Fire Hall	Mendenhall	6736960	436161	714

Well Details							
Well Casing Diameter (mm)	Year Well Installed	Well Log?	Well Depth (m bg)	Reported Low Permeability Protective Layer?	Pump Setting (m bg)	Well Capacity - Tested, or Reported by User	Static Water Level Below Ground (m-btwc)
150	?	No	43.2	Likely Bedrock from ~4m to ~43m	?	1/2hp submersible pump Size of pump meets needs	?

Well Construction Details				
Wellhead Above ground (m)	Well Cap	Well Screen	Surface Seal	Apron Grading
0.43 above grade	Split Cap Gasket	?	Unlikely	Inside building



**Table 1421-4: Potential Contaminant Source
Building 1421 – Mendenhall Fire Hall**

Potential Contaminant Source	Potential Contaminants	Distance from Water Source	Northing	Easting
Dump or Landfill	<i>Organic</i> and inorganic chemicals.	>>120 m		
Cemetery	<i>Biological</i> ¹ , inorganic ² and organic parameters.	>>120 m		
Sewage lagoon	<i>Biological</i> , inorganic and organic parameters.	>>300 m		
Sewage lines, tanks and lift stations	<i>Biological</i> , inorganic and organic parameters.	Approx. 20 m		
Septic fields	<i>Biological and Inorganic</i> parameters.	Approx 50 m	6736913	436185
Gas stations	<i>Organic and Inorganic</i> parameters.	>>30 m		
Undergrounds Fuel Storage Tanks (USTs)	<i>Organic</i> parameters.	>>30 m		
Above ground storage tanks (ASTs)	<i>Organic parameters.</i>	1 m, 20 m	6736960 6736956	436161 436175
Naturally occurring sources of contamination	<i>Radionuclides, Bacteria and Viruses from surfacewater sources.</i>	>150 m		

Notes: *Bold highlighting of distances indicates non-compliance with proposed guidelines*

1- Biological parameters include: bacteria, viruses, protozoa (parasitic organisms), helminthes (intestinal worms), and bio aerosols (inhalable moulds and fungi).

2 – Inorganic contaminants could include arsenic in embalming chemicals (prior to early 1900’s), and heavy metals in caskets.

Required Setback Distances Draft Guidelines for Part III – Small Public Drinking Water Systems:

300 m (1,000 ft) from a sewage lagoon or pit and manure heaps

120 m (400 ft) from a solid waste dump or a cemetery

30 m (100 ft) from any other potential source of contamination

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*No Log, must fill in missing information at a later time

SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin
Luke Lebel

Date May 10, 2005

WELL ID #	Owner	Location Description
1421	YTG	Mendenhall Fire Hall

1. Well Location and Potential Contaminant Sources

a. General location of well: (Community, Subdivision, etc.)

Mendenhall

b. Specific location: (Road or street, Building number, name of owner and/, legal description,

Mendenhall Fire Hall, Mendenhall drive

c. GPS location: 0436161 Easting; 6736960 Northing; elev: 714m; ±10m

d. Is there electric power? Yes No

e. Does the well system have:

15 or more service connections to a piped distribution system? If so how many _____
There is a public filling station and a fire hall supplied from the well

5 or more delivery sites on a trucked distribution system? If so how many _____

f. Nearest building, specify Mendenhall Fire Hall

g. Distance from well to building 7m to fire hall

h. If there is an effluent disposal field, is its location known? Yes No

i. Distance from well to nearest point of known field: ~60m

j. Well location relative to field: upslope downslope lateral

GPS Septic Tank/effluent field

0436185 Easting
6736913 Northing
721m Elevation ±5m

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k. Is there any part of a sewage disposal system(s) or other potential sources of pollution that may pose a

health and safety risk within 30 m? Yes No

Effluent field/septic tank 50m away

l. Is the well located within 300 m from a sewage lagoon or pit? Yes No

m. Is the well located within 120 m from a solid waste site or dump, cemetery? Yes No

There is, however, a small recycling depot

n. Is the infrastructure protecting the wellhead, pumphouse, storage tank and/or water treatment plant designed and secured to prevent:

Unauthorized access by humans? Yes No Entrance by animals? Yes No

The well is located inside a locked wellhouse with a cement floor

o. Is well site subject to flooding? Yes No

p. Is the well site well drained? Yes No

It is unlikely that any surface water will enter the well house

q. Is there a buried fuel tank on the property? Yes No

If yes, is it in use abandoned

Is the location known? Yes No

Distance from the well to known buried tank _____

r. Are there any other known contaminant sources on the property?

Yes No Describe _____

If yes, specify the source: dump sewage lagoon cemetery other

Potential Source 1: ASTZ; Distance from well to Potential Source 1: adjacent to well house ~ 1m

Potential Source 2: AST1; Distance from well to Potential Source 2: 20m

Potential Source 3: _____; Distance from well to Potential Source 3: 20m

Potential Source 4: _____; Distance from well to Potential Source 4: _____

s. Are there other wells on this property? Yes No

How many? _____ in use abandoned require proper sealing

436165
6736956
724m
± 11m

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2. Well and Wellhead information:

- * a. When was well installed? Year _____ Month _____
- * b. Type: drilled dug sand point other _____
- c. Is there a drillers log for the well: Yes No
Yet to be found
- d. Is there a surface seal to 6 m Yes No unknown unlikely
- e. Surface casing: Yes Diameter _____ No
The well head is within only a well house
- f. Well casing: Diameter $\frac{15\text{cm}}{(6")}$ Material: steel plastic concrete
- g. Depth of well: $240'$ measured (if possible) reported from log
- * h. Static water level below ground: cannot access
 measured (if possible) reported from log flowing
- * i. (If granular) Is the well completed: open end casing with a well screen
 with slotted pipe unknown other _____
- * j. (If bedrock) Does the well have a liner? yes No steel plastic
- * k. If there is a well screen: length _____ slot size(s) _____
Location of screen: from _____ to _____ from log reported
- * l. Is there a sump below the screen? Yes No
- m. Is the well head: in pumphouse in pit pitless adaptor in a building
Heated and well insulated pumphouse
 in a wooden enclosure other, describe _____
- n. If the well head is located in a wooden enclosure,

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- i. Is the well head below grade? describe in detail No, 43cm above grade, 26cm above concrete floor
- ii. Are there signs of ponding on the enclosure(e.g. water stains, etc.)? Yes No
- iii. Is the wellhead enclosed by fiberglass insulations? Yes No
The well house is well insulated and heated
- iv. Any evidence of rodents? Specify There is no evidence, however it appears that the wellhouse is regularly cleaned, No mouse traps
- v. Does the well casing have a proper seal cap? Yes No

If no, describe condition _____

3. Water Supplying This Well:

- a. By definition is the water from a surface water source or under the direct influence of surface water?
 Yes No farther investigation required.

If yes is there treatment Yes No

Explain (filtration, disinfection etc...) _____

4. Aquifer Supplying This Well:

- * a. The aquifer is: bedrock granular sediment unknown
likely bedrock based on well log information from other wells in the area that are of similar depth.
- b. Does water level and/or well capacity show seasonal fluctuation? Yes No

5. Pump Installation:

- a. Is the well equipped with a pump? yes No
- * b. Type of pump: hand electric submersible jet
 shallow well centrifugal other, _____
- * c. Description: Manufacturer _____ Model _____
horsepower _____ capacity _____ voltage _____

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* d. Date installed: _____ By: _____

* e. For submersible pump, depth of setting below surface _____

f. Drop pipe for submersible pump: steel plastic

g. Pump delivers water to: pressure tank elevated tank other

h. Are there automatic pump controls: Yes No

i. Is there provision for taking water samples before water reaches storage? Yes No

j. Is there a water meter on the system? Yes No

k. Is the pump and piping protected from freezing? Yes No

If yes, describe: It is all contained within a well insulated and heated well-house

l. Comments on pump installation: _____

6. Conclusions

a. Comments on overall installation:

see report

b. Recommendations: see report

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PART B: EBA Site Inspection

Inspector: BERT ALBISSEZ

Date May 10/05

WELL ID #	Owner	Location Description
1421	VTG	MENDEN HALL SUBDIVISION

6. Water Treatment

a. Is well water treated? Yes No; Type of treatment:

chlorination iron and or manganese removal other _____

b. Is water entering plumbing or piped distribution system treated with chlorine or another treatment that is as effective as chlorine used to achieve disinfection throughout the system?

Yes No If so how _____

c. If treated with chlorine, is the free residual chlorine concentration less than 0.2 mg/L

Yes No _____ reading.

Tested at _____ (location)

d. Is testing for chlorine residual concentration done at the tap (eg. Kitchen faucet) or from representative points in a piped distribution system, including a point from tap at the end line

Yes No If yes how often? _____

e. If the drinking water is being transported by water delivery truck does it have a minimum chlorine free residual of 0.4 mg/L at the time of fill. Yes No

7. Water Quality (observations):

a. Does the water stain plumbing? yes No slight severe

Type of stain: brown red black

b. Does the water contain sediment? Yes No occasional constant

c. Is there an unpleasant odour? Yes No H₂S Other _____

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- d. Is there an unpleasant taste? Yes No brackish Other _____
- e. Is there a history of bad bacterial analyses? Yes No
- f. Is there a chemical analysis? Yes No adequate incomplete
- g. Is there analysis of trihalomethanes (THMs) where the water source is a surface water supply or a well under the direct influence of surface water? Yes No
- h. Is the drinking water tested daily with an accurate reading chlorine test kit capable of reading in the range 0 to 3.5 mg/L of free chlorine residual in increments of 0.1mg/L? Yes No unknown
- i. If yes is the test performed in accordance with manufactures directions? Yes No unknown
- j. Is a record of the date, time, name of person performing the test and results of the drinking water sample kept? Yes No

TANK AND PIPING DETAILS

Tank Room

Is there a water tank? Yes No Details:

Where is it located?

Comments: 1-2000 GAL IN WELL HOUSE / 2-1250 GAL IN FIRE TANK

Is the room in which the water tank is located heated to maintain an optimum temperature of 4°C for stored water?

YES NO

Comments: _____

Are there windows in the add-on that may allow direct sunlight onto the water holding tank? YES

NO

Comments: _____

Are there other heat sources near the tank? YES NO

Comments: _____

Is there waterproof flooring with a sealed base to contain spills? YES NO

Comments: _____

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Overall Tank

What are the tank size and dimensions?

2000 GAL / 84" x 115" | 1250 AG.

What material is the tank constructed of? 2000 PE / 1250 FG.

Is tank and associated piping constructed of safe materials (i.e. CSA approved and material that does not affect the taste of the water)? YES NO

Comments: _____

Tank Inlet, Outlet and Lid

Is there adequate access on the tank for cleaning (i.e. min 15" access lid)? YES NO

Does the lid have a tight seal and is it watertight when closed? YES NO

Does the tank have an overflow or high level whistle? YES NO FG / YES / PE

Is the water tank drain accessible? YES NO

WATER TANK AND WATER QUALITY CONDITION

Are there signs of staining or biofouling? YES NO

Comments: _____

Is there any sediment or scum in bottom of tank? YES NO

Comments: _____

Is there any odour associated with the water or tank? YES NO

Have there been any bacteriological analyses conducted previously? YES NO

Does the tank appear that it has been cleaned recently? YES NO

Are the tanks easily assessed for the purpose of cleaning and disinfection? YES NO

8. Conclusions

a. Comments on overall installation:

PE TANK IN WELLHOUSE IS NOT SUITABLE FOR STORAGE OF DRINKING WATER.
NO TREATMENT IS IN PLACE.
TANK ACCESS IS NOT SUITABLE FOR CLEANING.

b. Recommendations:

REPLACE TANK IN WELL HOUSE WITH A TANK SIZE THAT IS ACCESSABLE FOR CLEANING. INITIATE REGULAR CLEANING SCHEDULE & INSTALL LIQUID CHLORINATION SYSTEM AND SCHEDULE REGULAR CHLORINE RESIDUAL ~~TESTING~~ TESTING.

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PART C Property Manager/ System Operator Questionnaire

Inspector: TERRY JACKSON Date May 10/05

Property manager: YTG. Mendonah fire hall

1) Water Source:

- a. Is the well water the major source of drinking water? Yes No
- b. Is the well water used for other non-drinking purposes? Yes No

2) Well information:

a. When was your well installed? Year _____ Month _____

b. Type: drilled dug sand point other _____

c. Is there a driller's log for the well?: Yes No

d. Do you know the depth of your well? If so, please indicate: 240

e. Who was the well constructed by?

Indicate contractor's name: _____

f. Are you, the owner Yes or other: YTG

g. Who maintains the well? _____

h. Are there other wells on this property? Yes No

How many? ____; Are they: in use abandoned require proper sealing

i. Is there a buried fuel tank on the property? Yes No

If yes, is it in use abandoned

Is the location known? _____

How was it abandoned? _____

3) Pump Installation

a. Who installed your pump, and when did they install it? _____

b. What type of pump do you have? _____

c. Pump delivers water to: pressure tank elevated tank other _____

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4) Water Treatment

a. Is your well water treated? Yes No

Type of treatment: chlorination iron and or manganese removal
other _____

5) Well Capacity:

a. Well capacity: User's opinion adequate inadequate

b. Are there any times of year when your well goes dry, or does not produce enough water?

c. Has well capacity decreased since it was installed? Yes No

6) Water Quality:

a. In general, do you like your water?: yes no

b. Does the water stain household plumbing? yes No slight severe

Type of stain: brown red black

c. Does the water contain sediment? Yes No occasional constant

d. Is there an unpleasant odour? Yes No

Sulphur (rotten egg smell) Other _____

e. Is there an unpleasant taste? Yes No brackish Other _____

f. Hardness: Is it hard to lather with soap?: yes, very moderate no

g. Is water softener being used? Yes No

h. Are samples for bacterial analysis (coliforms) taken regularly? Yes No

If so, at what time intervals? _____

Who takes them? _____

i. Is there a history of bad bacterial analyses? Yes No

j. Is there a chemical analysis? Yes No adequate incomplete

7) Do you have any overall comments or complaints about your water well system?



Photo 0091: 1421 Well house, Above Ground Storage Tank and Water-Pickup (front) and Mendenhall Firehall (back)



Photo 0087: 1421 Wellhead



Photo 0093: 1421 Above Ground Storage Tank



Photo 0094: 1421 Septic Field (front) and Mendenhall Firehall (back)



Photo 0089: 1421 Water-Pickup



Photo 0098: 1421 Pressure Tank and System



Photo 0088: 1421 Water Reservoir (in wellhouse)



Photo 0097: 1421 Water Storage Tanks (in firehall)